

# **ELECTRICAL COMMUNICATION**

**VOLUME 42**

**1967**



Published and Copyrighted by the  
**INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION**  
320 PARK AVENUE, NEW YORK, NEW YORK 10022 U.S.A.

## SUBJECT INDEX

	NUMBER	PAGES
Air-Traffic-Control System Realized, Predicted.....	4	487-488
Alexander, D. C.: See Awards		
Altimeter, Microminiature Radio. W. L. Garfield.....	4	479-486
Andes, Transmission-Loss Measurements Made on Two Knife-Edge Diffraction Paths Over the. R. E. Gray.....	1	84-90
Artemis, An Experimental Electronic Telephone Exchange. J. Duquesne, G. Le Strat, and A. Regnier.....	3	317-332
Awards:		
Alexander Receives Wire Association Medal.....	4	486
Awards Program Instituted by International Telephone and Telegraph Corporation.....	3	333
Columbus Medal Presented to Reeves.....	2	185
Earp, French, and Heaton-Armstrong Honored.....	3	349
Geneen and Stone Honored by Belgium.....	1	21
Hertz Premium to Heeks, Woode, and Sandbank.....	2	203
Himmel Honored.....	3	349
Spagnoli Appointed President of Manufacturers Association.....	3	332
Behavior of Telephone Subscribers Using Push-Button Selection. O. Baade and L. Gasser.....	2	236-246
Books:		
Bildröhren und Ablenkmittel (Picture Tubes and Deflection Components).....	1	55
Einheiten in Physik und Technik (Units in Physics and Engineering).....	3	379
Filter Design Tables and Graphs.....	3	356
Magnetische Werkstoffe und ihre technische Anwendung (Magnetic Materials and Their Application to Engineering).....	3	391
Radio Relay Systems.....	3	401
Schalter und Tasten (Reference Data for Switches and Push Buttons).....	3	414
Teletraffic Engineering Manual.....	3	368
Branly, Edouard: See Etching		
Cables:		
Coaxial Cable for 2700 Circuits. P. Norman and P. J. Howard.....	4	499-508
Railway Cable with High Screening Properties. A. Rambøl and L. Søegaard.....	1	115-126
Call Routing Strategies in Telecommunication Networks. Ch. Grandjean.....	3	380-391
Columbus Medal: See Awards		
Communications, Optical Subcarrier. J. H. Ward and M. L. Shechet.....	2	247-260
Computer Time-Sharing—A Review. N. Pointel and D. Cohen.....	2	193-203
Crosspoint Elements and Relays with Miniaturized Reed Contacts. H. Rensch.....	1	22-32
Crystal, Man-Made Quartz. R. W. T. Rabbett.....	1	73-83
Data Communication:		
Design of Medium-Speed Data Transmission Systems. E. P. G. Wright and A. D. Marr.....	3	343-349
GH 205 and GH 206 Medium-Speed Data Systems. C. E. Bloch.....	3	350-356
Deltaphone. J. S. P. Robertson and A. C. Beadle.....	2	212-219
Design of Medium-Speed Data Transmission Systems. E. P. G. Wright and A. D. Marr.....	3	343-349
Dialing: Behavior of Telephone Subscribers Using Push-Button Selection. O. Baade and L. Gasser.....	2	236-246
Digital Network, Potentialities of an Integrated. G. C. Hartley and J. H. Déjean.....	3	392-401
Diodes for Deep-Water Submarine Cable Repeaters, Silicon Planar Transistors and. J. M. Grocock.....	4	489-498
Dispersed Telecommunication Network Structure. J. H. Déjean, D. Cohen, Ch. Grandjean, and P. Sénèque.....	3	402-414
Earp, C. W.: See Awards		
Economics of Telecommunications Engineering, Some Ideas Regarding. H. R. Huntley.....	1	6-21
Elements for a General Theory of Service Processes (Summary) R. Fortet.....	3	368
Entraide Networks Combined with Link Systems. B. Caneill and D. Gutiérrez.....	3	369-379
Error Sensor, an Electronic Scanning Star Tracker, Fine-Guidance. R. A. Deters, D. R. Eisenhut, and R. F. Gates.....	2	204-211
Etching of Edouard Branly.....	3	367
Fine-Guidance Error Sensor, an Electronic Scanning Star Tracker. R. A. Deters, D. R. Eisenhut, and R. F. Gates.....	2	204-211
French, H. A.: See Awards		
Geneen, Harold S.: See Awards		
GH 205 and GH 206 Medium-Speed Data Systems. C. E. Bloch.....	3	350-356

	NUMBER	PAGES
<b>H</b> eaton-Armstrong, L. J.: See Awards		
Heeks, J. S.: See Awards		
Hertz Premium: See Awards		
Himmel, Leon: See Awards		
History of Inertial Navigators and Some Thoughts on Research Management. P. C. Sandretto.	1	47-55
<b>I</b> nertial Navigators and Some Thoughts on Research Management, History of. P. C. Sandretto.	1	47-55
Interlocking Systems for Railroad Track Switching, Security of. Wilhelm Schmitz.	4	524-540
<b>K</b> nife-Edge Diffraction Paths Over the Andes, Transmission-Loss Measurements Made on Two. R. E. Gray.	1	84-90
<b>L</b> ight: Optical Subcarrier Communications. J. H. Ward and M. L. Shechet.	2	247-260
Link Systems, Entraide Networks Combined with. B. Cancelli and D. Gutiérrez.	3	369-379
<i>Lo 133</i> , Teleprinter. W. Kaiser.	2	186-192
<b>M</b> agnetic Thin-Film Memory Having Low Access Currents. A. Judeinstein and J. M. Tyszka.	1	127-133
Man-Made Quartz Crystal. R. W. T. Rabbets.	1	73-83
Memory Having Low Access Currents, Magnetic Thin-Film. A. Judeinstein and J. M. Tyszka.	1	127-133
Microminiature High-Frequency Transmitter-Receiver. J. Lisimaque and J. Ribour.	3	334-342
Microminiature Radio Altimeter. W. L. Garfield.	4	479-486
Microwave Radio <i>RL4H</i> in Slimrack Construction. H. S. V. Reeves.	4	509-523
Mobile Radio:		
Microminiature High-Frequency Transmitter-Receiver. J. Lisimaque and J. Ribour.	3	334-342
Mobile Radio Equipment <i>SEM 25</i> . W. Kloepfer, G. Sidow, and P. Bamberg.	1	62-72
Multichannel Telephony, Portable 7-Gigahertz Radio System for. E. P. Reygaerts and P. G. Debois.	1	105-114
<b>N</b> umber Analyzer, an All-Electronic Route Translator. J. Van Goethem.	1	91-104
<b>O</b> ccupation Condition of a Group of Switches, Transitions in. J. H. Déjean and Ch. Grandjean.	2	261-269
Optical Subcarrier Communications. J. H. Ward and M. L. Shechet.	2	247-260
Other Papers from International Telephone and Telegraph System Authors.	1	156-160
	2	306-311
	3	455-461
	4	562-568
<b>P</b> atents: See United States Patents		
Pentaconta Private Branch Exchange, Pentomat <i>1000-T</i> , A Large. J. Van Mulders and D. Mouradian.	2	174-185
Pentaconta Telegraph Switching System. Adriaan Melis.	4	468-478
Pentaconta <i>32</i> Telephone Switching System for Rural Networks. E. Ekbergh.	1	56-61
Pentomat <i>1000-T</i> , A Large Pentaconta Private Branch Exchange. J. Van Mulders and D. Mouradian.	2	174-185
Portable 7-Gigahertz Radio System for Multichannel Telephony. E. P. Reygaerts and P. G. Debois.	1	105-114
Potentialities of an Integrated Digital Network. G. C. Hartley and J. H. Déjean.	3	392-401
Predicted Air-Traffic-Control System Realized.	4	487-488
Private Branch Exchange:		
Artemis, An Experimental Electronic Telephone Exchange. J. Duquesne, G. Le Strat, and A. Regnier.	3	317-332
Pentomat <i>1000-T</i> , A Large Pentaconta Private Branch Exchange. J. Van Mulders and D. Mouradian.	2	174-185
Propagation in Periodically Deformed Circular and Rectangular Waveguides. H. H. Snyder.	3	415-438
Public Address: Sound-Reinforcing Systems. M. L. Gayford and J. L. Goodwin.	2	220-235
Pulse Code Modulation for Automatic Switching of a Military Network. J. Le Corre and A. Pirotte.	3	357-367
Pulse Code Modulation, Transmission of Television by. J. D. Weston.	2	165-173
Push-Button Selection, Behavior of Telephone Subscribers Using. O. Baade and L. Gasser.	2	236-246
<b>Q</b> artz Crystal, Man-Made. R. W. T. Rabbets.	1	73-83
<b>R</b> adio Altimeter, Microminiature. W. L. Garfield.	4	479-486
Radio Equipment <i>SEM 25</i> , Mobile. W. Kloepfer, G. Sidow, and P. Bamberg.	1	62-72
Radio <i>RL4H</i> in Slimrack Construction, Microwave. H. S. V. Reeves.	4	509-523
Radio System for Multichannel Telephony, Portable 7-Gigahertz. E. P. Reygaerts and P. G. Debois.	1	105-114
Railroad Track Switching, Security of Interlocking Systems for. Wilhelm Schmitz.	4	524-540
Railway Cable with High Screening Properties. A. Rambøl and L. Saxegaard.	1	115-126
Reed Contacts, Crosspoint Elements and Relays with Miniaturized. H. Rensch.	1	22-32
Reed Crosspoint Telephone Switching System <i>10-CX</i> , Semielectronic. H. H. Adelaar and J. L. Masure.	1	33-46
Reeves, Alec Harley: See Awards		

	NUMBER	PAGES
Relays with Miniaturized Reed Contacts, Crosspoint Elements and. H. Rensch . . . . .	1	22-32
Repeaters, Silicon Planar Transistors and Diodes for Deep-Water Submarine Cable. J. M. Grocock . . . . .	4	489-498
Research Management, History of Inertial Navigators and Some Thoughts on. P. C. Sandretto . . . . .	1	47-55
<i>RL4H</i> in Slimrack Construction, Microwave Radio. H. S. V. Reeves . . . . .	4	509-523
Route Translator, Number Analyzer, an All-Electronic. J. Van Goethem . . . . .	1	91-104
Rural Networks, Pentaconta 32 Telephone Switching System for. E. Ekbergh . . . . .	1	56-61
Sandbank, C. P.: See Awards		
Security of Interlocking Systems for Railroad Track Switching. Wilhelm Schmitz . . . . .	4	524-540
Semielectronic Reed Crosspoint Telephone Switching System <i>10-CX</i> . H. H. Adelaar and J. L. Masure . . . . .	1	33-46
<i>SEM 25</i> , Mobile Radio Equipment. W. Kloepfer, G. Sidow, and P. Bamberg . . . . .	1	62-72
Shielding: Railway Cable with High Screening Properties. A. Rambøl and L. Saxegaard . . . . .	1	115-126
Silicon Planar Transistors and Diodes for Deep-Water Submarine Cable Repeaters. J. M. Grocock . . . . .	4	489-498
Slimrack Construction, Microwave Radio <i>RL4H</i> in. H. S. V. Reeves . . . . .	4	509-523
Some Ideas Regarding Economics of Telecommunications Engineering. H. R. Huntley . . . . .	1	6-21
Sound-Reinforcing Systems. M. L. Gayford and J. L. Goodwin . . . . .	2	220-235
Spagnoli, P. H.: See Awards		
Star Tracker, Fine-Guidance Error Sensor, an Electronic Scanning. R. A. Deters, D. R. Eisenhut, and R. F. Gates . . . . .	2	204-211
Stone, Admiral Ellery W.: See Awards		
Subcarrier Communications, Optical. J. H. Ward and M. L. Shechet . . . . .	2	247-260
Submarine Cable Repeaters, Silicon Planar Transistors and Diodes for Deep-Water. J. M. Grocock . . . . .	4	489-498
Subscriber Sets: Deltaphone. J. S. P. Robertson and A. C. Beadle . . . . .	2	212-219
Switching: See also Telephony		
Artemis, An Experimental Electronic Telephone Exchange. J. Duquesne, G. Le Strat, and A. Regnier . . . . .	3	317-332
Behavior of Telephone Subscribers Using Push-Button Selection. O. Baade and L. Gasser . . . . .	2	236-246
Call Routing Strategies in Telecommunication Networks. Ch. Grandjean . . . . .	3	380-391
Crosspoint Elements and Relays with Miniaturized Reed Contacts. H. Rensch . . . . .	1	22-32
Dispersed Telecommunication Network Structure. J. H. Déjean, D. Cohen, Ch. Grandjean, and P. Sénèque . . . . .	3	402-414
Entraide Networks Combined with Link Systems. B. Caneill and D. Gutiérrez . . . . .	3	369-379
Pentaconta Telegraph Switching System. Adriaan Melis . . . . .	4	468-478
Pentaconta 32 Telephone Switching System for Rural Networks. E. Ekbergh . . . . .	1	56-61
Pentomat <i>1000-T</i> , A Large Pentaconta Private Branch Exchange. J. Van Mulders and D. Mouradian . . . . .	2	174-185
Potentialities of an Integrated Digital Network. G. C. Hartley and J. H. Déjean . . . . .	3	392-401
Pulse Code Modulation for Automatic Switching of a Military Network. J. LeCorre and A. Pirotte . . . . .	3	357-367
Semielectronic Reed Crosspoint Telephone Switching System <i>10-CX</i> . H. H. Adelaar and J. L. Masure . . . . .	1	33-46
Transitions in the Occupation Condition of a Group of Switches. J. H. Déjean and Ch. Grandjean . . . . .	2	261-269
Telecommunication Networks, Call Routing Strategies in. Ch. Grandjean . . . . .		
Telecommunication Network Structure, Dispersed. J. H. Déjean, D. Cohen, Ch. Grandjean, and P. Sénèque . . . . .	3	380-391
Telecommunications Engineering, Some Ideas Regarding Economics of. H. R. Huntley . . . . .	1	6-21
Telegraph Switching: Pentaconta Telegraph Switching System. Adriaan Melis . . . . .	4	468-478
Telephony: See also Switching		
Behavior of Telephone Subscribers Using Push-Button Selection. O. Baade and L. Gasser . . . . .	2	236-246
Deltaphone. J. S. P. Robertson and A. C. Beadle . . . . .	2	212-219
Number Analyzer, an All-Electronic Route Translator. J. Van Goethem . . . . .	1	91-104
Portable 7-Gigahertz Radio System for Multichannel Telephony. E. P. Reygaerts and P. G. Debois . . . . .	1	105-114
Some Ideas Regarding Economics of Telecommunications Engineering. H. R. Huntley . . . . .	1	6-21
Teletypewriter <i>Lo 133</i> . W. Kaiser . . . . .	2	186-192
Television by Pulse Code Modulation, Transmission of. J. D. Weston . . . . .	2	165-173
Thin-Film Memory Having Low Access Currents, Magnetic. A. Judeinstein and J. M. Tyszka . . . . .	1	127-133
Time-Sharing—A Review, Computer. N. Pointel and D. Cohen . . . . .	2	193-203
Transistors and Diodes for Deep-Water Submarine Cable Repeaters, Silicon Planar. J. M. Grocock . . . . .	4	489-498
Transitions in the Occupation Condition of a Group of Switches. J. H. Déjean and Ch. Grandjean . . . . .	2	261-269
Translator, Number Analyzer, an All-Electronic Route. J. Van Goethem . . . . .	1	91-104
Transmission-Loss Measurements Made on Two Knife-Edge Diffraction Paths Over the Andes. R. E. Gray . . . . .	1	84-90
Transmission of Television by Pulse Code Modulation. J. D. Weston . . . . .	2	165-173
Transmitter-Receiver, Microminiature High-Frequency. J. Lisimaque and J. Ribour . . . . .	3	334-342
Traveling-Wave Tube: Propagation in Periodically Deformed Circular and Rectangular Waveguides. H. H. Snyder . . . . .	3	415-438

	NUMBER	PAGES
<b>United States Patents Issued to International Telephone and Telegraph System:</b>		
August 1965–October 1965.....	1	151–155
November 1965–April 1966.....	2	297–305
May 1966–July 1966.....	3	452–454
August 1966–October 1966.....	4	557–561
 <b>Waveguides, Propagation in Periodically Deformed Circular and Rectangular. H. H. Snyder . . .</b>		
Wooode, A. B.: See Awards	3	415–438
World's Telephones—1966.....	2	270–276
7-Gigahertz Radio System for Multichannel Telephony, Portable. E. P. Reygaerts and P. G. Debois	1	105–114
10-CX, Semielectronic Reed Crosspoint Telephone Switching System. H. H. Adelaar and J. L. Masure.....	1	33–46
1000-T, A Large Pentaconta Private Branch Exchange, Pentomat. J. Van Mulders and D. Mouradian.....	2	174–185

## RECENT ACHIEVEMENTS

Issue number and page appear at left of each listing.

1/135 Aircraft Carrier Control Approach Radar  
 2/292 Alarm Receiver *E 47*  
 1/145 Alarm System for Mersey Tunnel  
 3/451 Aluminum Die-Cast Boxes  
 2/282 Artemis Electronic Exchange Completed  
 3/439 Aurora Lights to be Investigated by Satellite  
 2/279 Automatic Manufacture of Wire Springs for Relays  
 2/285 Automatic Toll Network for Spain  
 4/551 Autotrack Receiver  
 1/147 Baghdad Airport Installation  
 4/544 Brazil Telephone Properties Sold  
 4/556 British Post Office to Extend Subscriber Distance Dialling  
 1/140 Category Scanning for Pentaconta Equipment  
 4/555 Colombia Expands Cali Telephone Network  
 3/450 Communication System for British Gas Board  
 2/281 Components for Hobbyists  
 2/294 Computer Center Expands Capabilities  
 2/294 Computer Type 822 *P*  
 2/294 Computer Type 825 *P*  
 1/135 Console for Composing and Altering Displays  
 4/556 Crossbar Private Automatic Branch Exchange in Austria  
 3/447 Crossbar Transit Centers at Birmingham and Leeds  
 4/549 Crossbar 67 Telephone Exchange in Austria  
 3/439 Cryptographic Protection of Commercial Teleprinter Traffic  
 1/142 CS2 Computer  
 4/552 Data Display System in Hospital  
 1/143 Data Link for Nuclear Power Control  
 4/545 Degassing Metals by Silver-Boat Technique  
 4/443 Digitor Remote Alarm System  
 4/552 Doppler Radio Range for Aircraft  
 1/143 Electrodynamic Telephone Receiver  
 2/278 European Mediterranean Tropo Network  
 2/296 Exploding Bridgewire Electronics Units  
 4/550 Ferrodot High-Speed Printer  
 2/295 Finland and Chile Radio Relay Systems  
 1/144 Format Translator for International Telegraphy  
 2/290 Frequency-Modulation Discriminator Using Thin Films  
 1/150 Gemini 11 Television Coverage  
 1/137 GH201 Data Link  
 2/281 Grosscimat Crossbar Exchanges to Finland and Mexico  
 1/141 Gunn Effect at High Pressures  
 4/555 Heat Sink Having Low Capacitance and High Resistance

1/142 High-Brightness Display Storage Tube  
 3/447 High-Frequency Radio Equipment for Colombia  
 3/451 Hi-G Relays  
 3/439 India Inaugurates First Pentaconta Telephone Exchange  
 1/146 Insertion-Loss Measuring Equipment  
 2/296 Interorgtechnika Exhibition in Moscow  
 3/450 Intervalometer for Rocket Launchings  
 2/283 Isolator Filters Use Active Signal Regeneration  
 2/288 Leafield Radio Station Officially Opened  
 4/542 Le Bourget International Air Show  
 1/140 Letter Sorting Machine *Mark 5*  
 3/445 London Telex Exchange  
 3/444 Mail Sorter Handles 21 600 Letters Per Hour  
 3/445 Main Distributing Frame in Miniature Size  
 3/448 Measurement Instruments  
 2/286 Measurement Instruments Introduced  
 4/553 Message Switching System for Irish Airport  
 1/135 Mexico Telephone Expansion  
 1/149 Microwave Filters Using Evanescent Waves  
 2/289 Microwave Link for Electricity Authority  
 3/450 Milliwatt Test Set of Pocket Size  
 1/137 Mobile Television Transmitter for Temporary Service  
 4/553 Modem *GH-1101*  
 1/148 Mössbauer Spectrometer  
 2/295 Motor Protector  
 1/140 Multimeter Type 462 *F*  
 4/555 Multiplex Equipment for 2700/1800-Channel Telephone Systems  
 1/136 Multiplex Telephone Equipment  
 1/134 Multiplexing of Pulse-Code-Modulation Systems  
 2/278 Nationwide Dialing Nearly Complete for Vienna  
 2/280 New Factories in Belgium  
 4/545 Orly Airport Gets Electronic Message Switching Center  
 1/134 Paris Inaugurates New Vaugirard Pentaconta Exchange  
 1/147 Pay Station for Dutch Administration  
 1/150 Pay Station for Export  
 4/549 Peak Photometer  
 2/281 Pentaconta Crossbar Equipment for Zambia  
 1/144 Pentaconta Exchange Inaugurated in Switzerland  
 4/545 Pentaconta Exchange in Como, Italy  
 1/149 Pentaconta Exchange in Morocco Hotel  
 4/547 Pentaconta Exchanges in Switzerland  
 4/450 Pentaconta Switching for Colombia  
 1/150 Pentaconta Switching Installed in Bahamas  
 1/146 Pentaconta Switching Serves Council of Europe

3/440 Phase Computing System for Radar  
 4/549 Photon Rate Meter  
 2/292 Piezoelectric Materials  
 4/546 Pneumatic Tubes for Schiphol Airport  
 1/139 Pneumatic Tube System for Cyclotron  
 3/446 Pneumatic Tube System with High Carrier Speed  
 1/142 Portable and Car Radio Combined  
 4/550 Post Office Automation Continues  
 3/442 Power Supply for Traveling-Wave Tubes  
 4/548 Printing Reperforator, Model *EPR*  
 1/148 Private Automatic Branch Exchange for Düsseldorf  
 2/283 Programed Instruction  
 4/556 Pulse-Code-Modulation Telephone Equipment  
 1/143 Pulse-Code-Modulation Telephone Equipment for England  
 3/443 Pulse-Code-Modulation Telephony for Finland  
 3/440 Pulse Coherent Doppler Radar  
 4/549 Racetrack Traffic Indicator  
 3/444 Radar Simulators  
 4/556 Radio Control for Cranes  
 1/138 Radio Network for Mexico  
 4/551 Radiotelescope for Belgium  
 2/291 Relay for Printed Circuits  
 3/450 Relay Type 26  
 3/451 Russia Receives Capacitors from France  
 2/277 Satellite Earth Terminal in Grand Canary Island  
 3/442 Satellite Television Relay Across Pacific  
 4/541 Satellite Tracking Station Is Transportable  
 2/294 Solenoids for Linear Action  
 3/446 Sonar Data Recording  
 4/546 South Vietnam Inaugurates Automatic Telephone Switching System  
 2/277 Soviet Minister Sergueitchuk Visits Standard Elektrik Lorenz  
 1/144 Spark-Gap Protectors  
 2/280 Standard Telecommunication Laboratories Increases Plant

2/283 Submarine Cable between Portugal and Britain Uses Transistors  
 4/543 Submarine Cable for Telephony Between South Africa and Europe  
 1/145 Subscriber Set *SSB 2904*  
 4/541 Symposia in Europe  
 4/547 Tank Simulator  
 4/554 Telecommunications for German Motorways  
 3/439 Telediagnosis System for Mobile Use  
 1/138 Telegraph Message Switching Assured by Synchronous Operation of Duplicate Equipment  
 3/448 Telephone Subscriber Loudspeaker  
 3/449 Teletypesetter for Newspapers  
 3/446 Television Chrominance Delay Line  
 1/135 Television Color Signal Generator  
 4/554 Television Transmitters for Broadcast Bands IV/V  
 3/445 Television Transmitters for Second Program in Austria  
 2/279 Tellurium Deposition for Recording  
 4/556 Thailand Radio Relay Network  
 4/555 Thick-Film Circuits  
 2/293 Toll Originating Exchange for Paris Area  
 2/295 Toll Terminating Exchange "Pastourelle"  
 3/442 Track-Diagram Installation Replaces 8 Railroad Signal Towers  
 2/286 TransITT Very-High-Frequency Marine Radiotelephone *STR 60*  
 2/285 TransITT 12 Very-High-Frequency Main Station  
 2/290 Transmission Test Set *UN2*  
 2/285 Transponder *NR-A1-2A*  
 4/553 Travelling-Wave Tube *W45B/5E*  
 4/548 Tuner Diodes for Television  
 1/141 Ultrafast Multiplier Phototube  
 1/147 Undersea Cable Between Venezuela and Virgin Islands  
 3/449 Vacuum Relay  
 3/445 V-Belt Conveyor for Swissair  
 1/146 Virgin Islands Gets Direct Distance Dialing  
 1/149 7EN Rotary Exchanges

## AUTHOR INDEX

	NUMBER	PAGES
Adelaar, H. H. Semielectronic Reed Crosspoint Telephone Switching System <i>10-CX</i> .....	1	33-46
Baade, O. Behavior of Telephone Subscribers Using Push-Button Selection.....	2	236-246
Bamberg, P. Mobile Radio Equipment <i>SEM 25</i> .....	1	62-72
Beadle, A. C. Deltaphone.....	2	212-219
Bloch, C. E. <i>GH 205</i> and <i>GH 206</i> Medium-Speed Data Systems.....	3	350-356
Canceill, B. Entraide Networks Combined with Link Systems.....	3	369-379
Cohen, D. Computer Time-Sharing—A Review.....	2	193-203
Cohen, D. Dispersed Telecommunication Network Structure.....	3	402-414
Debois, P. G. Portable 7-Gigahertz Radio System for Multichannel Telephony.....	1	105-114
Déjean, J. H. Dispersed Telecommunication Network Structure.....	3	402-414
Déjean, J. H. Potentialities of an Integrated Digital Network.....	3	392-401
Déjean, J. H. Transitions in the Occupation Condition of a Group of Switches.....	2	261-269
Deters, R. A. Fine-Guidance Error Sensor, an Electronic Scanning Star Tracker.....	2	204-211
Duquesne, J. Artemis, An Experimental Electronic Telephone Exchange.....	3	317-332
Eisenhut, D. R. Fine-Guidance Error Sensor, an Electronic Scanning Star Tracker.....	2	204-211
Ekbergh, E. Pentaconta 32 Telephone Switching System for Rural Networks.....	1	56-61
Fortet, R. Elements for a General Theory of Service Processes (Summary).....	3	368
Garfield, W. L. Microminiature Radio Altimeter.....	4	479-486
Gasser, L. Behavior of Telephone Subscribers Using Push-Button Selection.....	2	236-246

	NUMBER	PAGES
Gates, R. F. Fine-Guidance Error Sensor, an Electronic Scanning Star Tracker.....	2	204-211
Gayford, M. L. Sound-Reinforcing Systems.....	2	220-235
Goodwin, J. L. Sound-Reinforcing Systems.....	2	220-235
Grandjean, Ch. Call Routing Strategies in Telecommunication Networks.....	3	380-391
Grandjean, Ch. Dispersed Telecommunication Network Structure.....	3	402-414
Grandjean, Ch. Transitions in the Occupation Condition of a Group of Switches.....	2	261-269
Gray, R. E. Transmission-Loss Measurements Made on Two Knife-Edge Diffraction Paths Over the Andes.....	1	84-90
Grocock, J. M. Silicon Planar Transistors and Diodes for Deep-Water Submarine Cable Repeaters.....	4	489-498
Gutiérrez, D. Entraide Networks Combined with Link Systems.....	3	369-379
Hartley, G. C. Potentialities of an Integrated Digital Network.....	3	392-401
Howard, P. J. Coaxial Cable for 2700 Circuits.....	4	499-508
Huntley, H. R. Some Ideas Regarding Economics of Telecommunications Engineering.....	1	6-21
Judeinstein, A. Magnetic Thin-Film Memory Having Low Access Currents.....	1	127-133
Kaiser, W. Teleprinter <i>Lo 133</i> .....	2	186-192
Kloepfer, W. Mobile Radio Equipment <i>SEM 25</i> .....	1	62-72
Le Corre, J. Pulse Code Modulation for Automatic Switching of a Military Network.....	3	357-367
Le Strat, G. Artemis, An Experimental Electronic Telephone Exchange.....	3	317-332
Lisimaque, J. Microminiature High-Frequency Transmitter-Receiver.....	3	334-342
Marr, A. D. Design of Medium-Speed Data Transmission Systems.....	3	343-349
Masure, J. L. Semielectronic Reed Crosspoint Telephone Switching System <i>10-CX</i> .....	1	33-46
Melis, Adriaan. Pentaconta Telegraph Switching System.....	4	468-478
Mouradian, D. Pentomat <i>1000-T</i> , A Large Pentaconta Private Branch Exchange.....	2	174-185
Norman, P. Coaxial Cable for 2700 Circuits.....	4	499-508
Pirotte, A. Pulse Code Modulation for Automatic Switching of a Military Network.....	3	357-367
Pointel, N. Computer Time-Sharing—A Review.....	2	193-203
Rabbetts, R. W. T. Man-Made Quartz Crystal.....	1	73-83
Rambøl, A. Railway Cable with High Screening Properties.....	1	115-126
Reeves, H. S. V. Microwave Radio <i>RL4H</i> in Slimrack Construction.....	4	509-523
Regnier, A. Artemis, An Experimental Electronic Telephone Exchange.....	3	317-332
Rensch, H. Crosspoint Elements and Relays with Miniaturized Reed Contacts.....	1	22-32
Reygaerts, E. P. Portable 7-Gigahertz Radio System for Multichannel Telephony.....	1	105-114
Ribour, J. Microminiature High-Frequency Transmitter-Receiver.....	3	334-342
Roberton, J. S. P. Deltaphone.....	2	212-219
Sandretto, P. C. History of Inertial Navigators and Some Thoughts on Research Management..	1	47-55
Saxegaard, L. Railway Cable with High Screening Properties.....	1	115-126
Schmitz, Wilhelm. Security of Interlocking Systems for Railroad Track Switching.....	4	524-540
Sénèque, P. Dispersed Telecommunication Network Structure.....	3	402-414
Shechet, M. L. Optical Subcarrier Communications.....	2	247-260
Sidow, G. Mobile Radio Equipment <i>SEM 25</i> .....	1	62-72
Snyder, H. H. Propagation in Periodically Deformed Circular and Rectangular Waveguides....	3	415-438
Tyszka, J. M. Magnetic Thin-Film Memory Having Low Access Currents.....	1	127-133
Van Goethem, J. Number Analyzer, an All-Electronic Route Translator.....	1	91-104
Van Mulders, J. Pentomat <i>1000-T</i> , A Large Pentaconta Private Branch Exchange.....	2	174-185
Ward, J. H. Optical Subcarrier Communications.....	2	247-260
Weston, J. D. Transmission of Television by Pulse Code Modulation.....	2	165-173
Wright, E. P. G. Design of Medium-Speed Data Transmission Systems.....	3	343-349